VOLUME LII, No. 16 AUGUST 4, 1955

THE JOURNAL OF PHILOSOPHY

WHAT ARE LAW-STATEMENTS ABOUT?[1]

IN his recent book on logical theory Mr. P. F. Strawson has argued that certain law-statements may be properly analyzed as making a predication of or saying something about a subject. Such analysis, as Strawson is careful to point out, is impossible if we take the logic of *Principia Mathematica* as having the universal and unqualified application that is customarily claimed for it. The only subject-predicate statements—the only statements that say something about a subject—according to this logic are singular, and the relation of subject to predicate is thus to be considered as that of an individual to its properties. Any generalized statement, and hence any statement that could serve as a scientific law, is positively or negatively existential rather than subject-predicate in its logical form.

In the present paper I shall attempt neither to expound nor to criticize Strawson's position. I want instead to suggest an alternative position which, though it regards law-statements as saying something about a subject, is just as far from Strawson as it is from a more orthodox interpretation of *Principia Mathematica*. A few remarks about terminology are in order first. I shall distinguish between "sentence" and "statement" as follows. Sentences are linguistic expressions some of which may be used to make statements, but there is no unique correspondence between sentence and statement. Different sentences may be used to make the same statement and the same sentence may be used on different occasions to make different statements. A statement, then, is not an entity denoted by or otherwise correlated with a sentence; it is simply what results from a use of certain sentences. To ask what a given statement asserts—or what one intends by a given statement—is thus the same as to ask how certain sentences are used on certain occasions. I shall not distinguish between "law" and "law-statement," and I have adopted the latter expression merely to emphasize that in this paper I shall regard a law as a certain kind of statement and not as something to be correlated with statements or sentences. Since my concern throughout is

[1] Read at the meeting of the Western Division of the American Philosophical Association at Champaign, Illinois, May, 1954.

with laws of empirical science and never with laws of mathematics or logic, I have not bothered to prefix the word "empirical" when I talk about laws. I shall have nothing to say concerning the evidence for law-statements or how they are established by induction. My concern is rather with certain aspects of the problem: granted that there are established law-statements, what do we assert when we make such a statement? What is our statement about and what does it say of what it is about? I shall be able in this paper, however, to consider only the most general features of the problem; the analysis will not be carried far enough to consider even such a general point as the concept of causality.

I

A common-sense way of analyzing what a statement asserts is to begin by locating in a sentence expressing the statement certain terms which indicate what the statement is about. For example, we may say that "All cats are mammals" is about cats and mammals. While this procedure may do well enough for certain purposes of common-sense discourse, it seems to break down when we accept certain principles of elementary logic. "All cats are mammals" is logically equivalent to "All nonmammalian things are nonfeline," and in this equivalent form the statement appears to be about feline or nonfeline and mammalian or nonmammalian things, which is of course the same as saying that it is about anything whatsoever. These considerations suggest that the important factor in an analysis of what statements like the above assert must lie in the adjectival or predicative rather than the indicative function of the terms. "All cats are mammals" and "All crows are black" are different statements, not because they are about different things, but because they contain different predicates. While both statements are about anything whatsoever, the one statement asserts of anything that it is not a nonmammalian cat and the other asserts of anything that it is not a nonblack crow.

Particular statements, on the other hand, may seem more difficult to construe as being about just anything whatsoever. "Some crows are black" can hardly be taken as asserting of anything you please that it is or is not of such and such a character. But if we follow the suggestion noted in the consideration of universal statements and turn to the adjectival or predicative rather than the indicative function of the terms, we are led to the conclusion that "Some crows are black" does assert of anything whatsoever that it is a member of a class of things which

contains at least one black crow. In other words, the predicate "being a black crow" is said to apply to at least one thing—or alternatively, the universal class, the class of which anything whatsoever is a member, is said to contain at least one black crow. Universal and particular statements, then, are both about, or have as their subject, anything you please. But universal statements characterize this subject negatively—they assert that whatever it may be it does not possess a certain specified property; while particular statements characterize the subject positively—they assert that whatever it may be it belongs to a class which contains at least one thing with a certain specified property.

This way of analyzing what statements assert has the advantage of remaining consonant with a purely extensional or truth-functional point of view. Terms in their adjectival or predicative function may be differentiated from each other as matrices which determine different classes of true statements. The adjectives "feline" and "mammalian," for example, differ as the class of true statements determined by the open sentence or matrix "x is feline" differs from the class determined by "x is mammalian." Any statement which appears to be about cats and mammals may thus be analyzed as asserting a truth-functional connection between these two matrices. Since the range of the variable in either matrix has no restriction except that of logical type, the statement obtained when the variable is quantified is about anything—any individual—whatever.

From this point of view we may distinguish three classes of statements. (1) Statements in which the quantification must extend over a complex matrix containing two or more matrices truth-functionally connected, e.g., $(x)(Px \supset Qx)$ or $(\exists x)(Px \cdot Qx)$. (2) Statements in which the quantification is confined to a matrix regarded as incomplex, e.g., $(x)Px$ or $(\exists x)Px$. (3) Statements which result from substituting for all the variables in a matrix, e.g., Pa or Pb.

In many respects the important contrast here is between statements of the third class and those of either of the first two classes, or, in other words, between singular statements and quantified statements. Yet the distinction between statements of class (1) and those of class (2) is of fundamental importance for the analysis of law-statements. A law-statement can never be adequately analyzed when it is represented by a quantification confined to a single incomplex matrix, i.e., a matrix containing but one predicate. Suppose, for example, that we took the predicate "P" to mean the property of being either nonfeline or mammalian, and that we then represented the law-statement "All cats

are mammals" by putting a universal quantifier before the incomplex matrix "*Px.*" We would then have to say in our limited language that a sentence which meant the same as "Everything is *P*" expressed a scientific law. The trouble with this procedure is, of course, that "*P*" as understood by a biologist is complex and not simple as we have represented it. A scientist is not concerned with the discovery of single predicates that apply to everything but rather with the discovery of interrelations among various predicates, and it is only as a complex of interrelated predicates that scientific laws apply to everything.

The universal quantification of incomplex matrices may yield what is sometimes called a presupposition of science, though never a law of science. We might argue that a scientist presupposes the truth of statements like "Everything is identical with itself," "Everything has a cause," "Everything is spatio-temporally located," etc., but we would hardly want to argue that these statements express laws which the scientist sets out to discover. A somewhat similar account holds for the particular quantification of incomplex matrices. While a statement which asserts that at least one thing possesses a certain incomplex property may occur as part of the expression of a complicated scientific law, it can hardly be said that such a statement by itself constitutes a law. We might argue that every scientific inquiry is forced to make certain existential presuppositions, e.g., that there are bodies, rigid objects, heavy objects, etc., but then none of these existential statements by itself constitutes a law to be discovered by inquiry.

I do not want in this paper to examine the claim that science must make presuppositions, either in one or both of the senses just indicated. My concern is first of all to point out the difference between statements of class (1) and class (2), as this difference concerns the analysis of law-statements. I have mentioned the presuppositions of science only to indicate where statements of class (2) may have a place within a general account of scientific inquiry, if they are to have a place. The main point which I trust has emerged from this consideration of quantified statements is the importance of the problem of determining the appropriate predicates. Before we can construct a language adequate for the analysis of law-statements we must have the proper criteria for selecting simple predicates. And inseparable from this problem of predicates is the problem of specifying the subjects in the statements of class (3), i.e., in singular statements. We have already remarked that predicates are differentiated from each other as open sentences or matrices which determine different classes of true statements, and since each of these statements is singular

our remark is only another way of saying that predicates differ by being applicable to different individuals. But then it seems obviously circular to say that individuals differ only by having different predicates.

We might try to cope with the problem by seeking predicates which can be understood without reference to any particular individual or set of individuals—in other words, predicates which signify properties that are immediately perceived rather than inferred from an examination and comparison of given individuals. A color predicate like "blue," for example, appears to signify such an immediately perceived property, while "five feet long" must be understood as the result of comparing an individual with a given measuring stick. With this division of predicates, we may argue that immediately perceived properties constitute the ultimate individuals of cognitive discourse, while what are more commonly called individuals are actually collections or bundles of such properties. On the other hand, we might regard individuals simply as space-time points with respect to which immediately perceived properties are given objective locus.

I shall not attempt to develop and criticize this view of predicates or either of the views of individuals suggested. I wanted merely to indicate how in general we might proceed to construct a framework for the analysis of law-statements if we accept what I have taken as the fundamental requirement of a truth-functional analysis, that is, if we regard a law-statement as always comprising an interrelation of predicates conceived as statement matrices, and if we restrict the subject-predicate relation to that relation between individual and predicate in a singular statement obtained from a matrix. The alternative position which I wish to sketch in the remainder of this paper rejects both points of this requirement. Law-statements are not analyzed as comprising relations among statement matrices and the subject-predicate relation is applied in a sense to law-statements. I do not regard a truth-functional analysis as necessarily incompatible with the alternative I am going to propose, though the two analyses may be interpreted in such a way as to make them incompatible. At the close of the paper I shall comment briefly on this problem of compatibility and try to indicate a point of view which will accommodate both analyses.

II

A strong case against the view that law-statements have a subject-predicate form can be made without reference to truth-functional logic. While statements like "All cats are mammals"

appear to be laws with a subject-predicate form, science affords many instances of laws which certainly do not appear to have such a form. A common example is the principle of inertia, which would seem to be about bodies free of impressed forces if we take is as having a subject-predicate form. But since a physicist clearly makes no claim to be talking about such bodies, the principle appears to be hypothetical rather than subject-predicate in form and to assert a connection between the properties of being corporeal and free of impressed forces and of continuing in a state of rest or of uniform rectilinear motion. We thus seem compelled to recognize at least some scientific laws as hypothetical in form, quite apart from considerations of formal logic. And when we reflect that even an apparent subject-predicate statement like "All cats are mammals" is formally equivalent to "All nonmammalian things are nonfeline" and hence to the hypothetical "If anything is feline it is mammalian," we may be strongly inclined to the view that all universal law-statements are properly analyzed as hypothetical. It is then a further question as to whether the hypothetical connection should be taken truth-functionally or otherwise. But since the position I want to suggest as an alternative to a truth-functional analysis does not concede even this hypothetical character of law-statements, I shall begin with a consideration of how the principle of inertia may in a sense be said to have a subject and a predicate.

We have already noted the failure of any attempt to determine the subject of a law-statement by locating in a sentence expressing the statement certain terms which indicate what the statement is about. Even if a physicist talked about bodies free of impressed forces as a biologist talks about cats, this fact by itself would not provide a reason for regarding the principle of inertia as having a subject-predicate form. However we express the principle, the sentence we use would be subject to the same rules of logical equivalence as those which we noted in the case of "All cats are mammals," and from this point of view the principle is of course about anything whatsoever.

Yet we do speak of the principle as having an appropriate subject matter, viz., the motion of bodies, and it makes sense to say that the principle is about this subject matter as distinct from other subject matters. Historically, the principle appeared as a proposal to reject the Aristotelian view that corporeal motion must be sustained by a push or pull for every moment of its duration, and to adopt instead the view that a body always continues in a state of rest or uniform rectilinear motion until acted on by external forces. With complete propriety of speech we may

speak of these two views as opposing conceptions of the same subject matter, and in a legitimate sense of the words "subject" and "predicate" the two views may be distinguished as different predicates attributed to a single subject. But the word "subject" in this case refers to what the principle, in the course of scientific discussion, is understood to be about—or, in other words, to the subject matter under discussion. The subject in this sense is not necessarily what is designated by the grammatical subject of a sentence used to express the principle, and it certainly is not to be taken as just anything whatsoever. The word "predicate" in this case has the broad sense of referring to any characterization of a subject matter.

From this point of view we might say that there is a sense in which the principle of inertia has a subject-predicate form. Its subject is corporeal motion and its predicate consists in the characterization of this subject as remaining constant until changed by external forces. But then it remains to be shown that this way of construing the principle has any merit—that we have achieved anything more that a Pickwickian sense which is utterly useless for philosophic analysis. As a first step in the consideration of this problem I shall try to show how the proposed subject-predicate view may apply to scientific laws generally if we grant certain distinctions and qualifications.

III

Another familiar example of a law which would not seem in any philosophically relevant sense to have a subject-predicate form is the general gas law for temperature, pressure, and volume. This law appears simply to assert a relation between the temperature, pressure, and volume of a gas and not to predicate anything of a subject. But in analogy with our consideration of the principle of inertia we may say that what the law is about is indicated by the phrase "of a mass of gas," which is understood if not explicitly stated when the law is given simply as a formula relating the variables P, V, and T. From this point of view the law-statement as a whole has the role of predicate, since the formula characterizes a gas by interrelating three of its observable properties.

Yet the relation of predicate to subject in this case is not the same as in the principle of inertia. We have a theory about the constitution of gases which enables us to explain the interrelation of properties stated in the general gas law. In other words, the fact that the predicate belongs to the subject is accounted for by a theory. But we have no theory to account for the fact that

corporeal motion possesses the property ascribed to it by the principle of inertia. Rather, the principle itself tells us how we are to conceive of corporeal motion, just as the kinetic theory of gases may be said to tell us how to conceive of a gas. In order to accommodate this difference in the relation of predicate to subject we may say that while all laws are descriptive of a subject matter, some laws are *merely descriptive* and others are *definitive* as well as descriptive. A law is definitive when the description it affords of a subject matter is not taken as requiring a theory to account for it, but rather as itself supplying a theory which will account for further descriptions of the subject matter. Thus, the principle of inertia provides a theory about corporeal motion which enables us to account for certain of its observed properties that the Aristotelian theory could never satisfactorily account for.

The laws which are taken as definitive rather than merely descriptive may vary with the context of inquiry and with the stage to which inquiry has advanced. The kinetic theory of gases, for example, may be definitive in a context limited to consideration of the observable properties of gases. But in a wider context the theory becomes a merely descriptive law in relation to atomic theory taken as definitive. Again, at one stage in the history of biology, the laws of classification which located cats in the animal kingdom were definitive with respect to other laws of feline morphology which were merely descriptive; later, the theory of organic evolution provided an explanation for the entire classificatory scheme of biology. But if the progress of science is thus toward fewer and more comprehensive definitive laws, this does not mean that the ultimate goal of science is a single set of definitive laws so comprehensive that all other laws become merely descriptive of anything whatsoever. Even if scientific investigation became so unified that a single theory provided the only definitive laws, it would still not be within the province of science to proclaim that these laws were definitive of anything we might indicate—that the theory accounted for all the reality there is.

What I am trying to say, in short, is simply that ultimate or all-inclusive generalization is metaphysical and not scientific. In so far as the ancient atomists, for example, tried to account for the phenomena they observed by their atomic theory they remained scientists, but when they passed to the ultimate generalization that nothing is except atoms and the void they became metaphysicians. Similarly, a present-day physicist continues to speak as a scientist though he proclaims that his subject matter is all physical reality and that he is seeking a unified theory that will be definitive of this reality; he speaks as a metaphysician only

when he proceeds to the generalization that all the reality there is is physical reality. Science as distinct from metaphysics has a limited subject matter, however broadly that subject matter may be conceived. I do not mean by this to deny that all reality can be accounted for by a scientific theory; I mean only that the judgment that what is so accounted for comprises all reality is metaphysical and not scientific. Scientific subject matter is always limited in the sense that science can never pronounce it unlimited. We make the same point when we say that the words "being," "existence," and "reality," as they are normally understood, can never serve as descriptive terms in law-statements, whether the laws are definitive or merely descriptive.

We may now turn to the question of whether the subject-predicate view proposed here may apply to scientific laws generally. To claim that it does apply is to hold that for every law there is a proper subject matter which can be identified descriptively, i.e., identified by terms which fall short of absolute generality—by terms like "matter," "energy," "spatio-temporal location," "organic," as opposed to "being," "existence," "reality." Insofar as the description afforded is taken as providing a theory which accounts for further descriptions rather than as a description which is itself to be accounted for, the law is definitive; otherwise it remains merely descriptive. This characterization of laws does not assume that the subject matter is always, or even usually, indicated by terms which actually occur in the sentence normally used to make the law-statement. It is assumed only that an adequate exposition of what one intends to assert by the law-statement will make clear the subject matter. The qualification must be added that determination of subject matter, and hence the distinction between definitive and merely descriptive laws, is relative to contexts and situations of inquiry.

IV

The philosophic relevance of this subject-predicate view of law-statements is perhaps best indicated in brief by consideration of the counter claim that the view is not applicable to laws generally. If it is not applicable there must be at least one law which, though merely descriptive and not definitive, is not descriptive of any subject matter that can be specified by definitive laws. That is, the law must be descriptive of anything whatsoever, of what we refer to by words or phrases like "reality, "the real," or "what is the case" rather than by descriptive predicates. As we have already noted, such a law is not adequately analyzed as ascribing an incomplex predicate to reality, as having the form

"Everything is *P*." We must instead analyze the law-statement as a complex of interrelated predicates ascribed to reality, and hence as hypothetical rather than subject-predicate in form. But there is no reason for saying that any one law rather than another should be analyzed in this fashion. Any law can be so analyzed, and the reasons for preferring such analysis lie in a philosophic conception of what constitutes a law rather than in the peculiarities of any given law. The alternatives, then, are to regard no law or every law as having a subject matter which is characterized definitively by descriptive predicates.

With the first alternative we must find some way of distinguishing law-statements from other statements which are descriptive of anything whatsoever. "If anything is a unicorn it sings 'Turkey in the Straw'" and "If anything is a body free of impressed forces it continues in a state of rest or of uniform rectilinear motion" are both equally true and descriptive of reality on a truth-functional interpretation of "if . . . then." In the attempt to justify our labeling the one "fancy" and the other "science" we come back to the problem of finding criteria for the selection of simple predicates. Instead of saying that only the one statement asserts something true about what is properly scientific subject matter, we want with this position to say that while both statements are true of what they are about only the one contains no predicates inappropriate for law-statements. The claim that in scientific laws the hypothetical connection is nontruth-functional will alter the character of the problem but will not enable us to avoid it. As well as simple predicates we must then seek predicates which yield statement-matrices connected in a special way that cannot be specified truth-functionally. And whatever our claim regarding the hypothetical connection, the problem of relating individuals and properties remains inseparable from our problem of determining simple predicates.

With the second alternative we do not have to find means for distinguishing a law-statement from other universal statements which are true and describe precisely what the law-statement describes. A distinguishing mark of a law-statement, from this point of view, consists in the fact that, when it is not taken as descriptive of anything whatsoever it still remains true and is descriptive of subject matter for scientific investigation. This, we are assured by science, holds for the principle of inertia but not for a fanciful statement like "All unicorns sing 'Turkey in the Straw.'" While it is true that every nonsingular statement is in a sense about anything whatsoever, such a remark does not provide an answer to the question "What are law-statements

about?" We can answer this question specifically only by the definitive laws science establishes, but philosophically we have the general answer that any law-statement is about a subject matter which can be definitively characterized by descriptive predicates. This general answer is all that philosophy—or talk about science as opposed to the practice of science—can say in the way of determining the predicates that are constitutive of science. Any attempt to specify what these descriptive predicates are is a task for science and not for philosophy. From this point of view, a single philosophic endeavor which seeks at the same time both to determine the simple predicates of law-statements and to explicate the relation of individuals to immediately perceived properties represents a fusion of philosophic and scientific problems. A refusal to accept this merging of problems does not mean the abandonment but only the relocation of philosophic problems. Science is concerned with the individual simply as an instance of subject matter it hopes ultimately to characterize by definitive laws. Interest in the peculiarities of a given individual does not extend beyond those factors that may make the individual atypical with respect to certain experiments. An explication of what we mean by "individual existence" and how this notion is related to immediately perceived properties remains a philosophic problem, but a problem that is separable from the scientific inquiry which determines the descriptive predicates of law-statements.

With this second alternative the relation of predicate to individual subject in a singular statement is thus not the same as the relation of predicate to subject matter asserted by a law-statement. When we say that John has red hair we do not consider whether our statement is definitive or merely descriptive and needing to be explained by what is definitive of John. We take the statement simply as asserting a fact about John, and to ask what we intend as the peculiar individual existence we name "John" carries us at once to an abstruse philosophic problem far beyond the normal considerations of ordinary discourse. On the other hand, if we say that John has red hair because his father had we are not referring to John simply as an individual existence. We have indicated that we are prepared to assert as a law-statement "All sons of red-headed fathers have red hair," and our reference to John is thus to an instance of subject matter. Whether what we have taken as a law-statement is one in fact, and, if so, whether it is merely descriptive or definitive are questions which call for scientific and not philosophic inquiry. To be sure, there is also the philosophic problem of explaining what we mean by "an instance of subject matter," but this is a problem which arises in

our talk about science and not in the practice of science. The resolution of the problem does not yield anything constitutive of science and is thus not required in order to determine whether a given statement constitutes a law-statement.

I promised to say something in conclusion about the compatibility of a truth-functional analysis with the sort of subject-predicate view I have been sketching. If we regard the logic of *Principia Mathematica* as an analytic tool which may be applied to all statement-making sentences for the purpose of identifying valid implications, I see no respect in which it becomes inconsistent with what I have said about law-statements. The situation is different, however, if we regard *Principia Mathematica* as also affording the architectonic to be used when we try to specify what law-statements are about. This view, I have suggested, leads to a search for simple predicates which constitutes a fusion of philosophic and scientific problems. The view which I have indicated as an alternative takes its architectonic from a pattern manifested in the practice of science—the pattern of seeking to explain laws by reference to other laws which are taken as definitive of a subject matter. With this pattern as architectonic, the first thing a philosopher must say when he attempts to specify what law-statements are about is that they are always about a subject matter which is definitively characterized by descriptive predicates. Law-statements are then ultimately subject-predicate rather than hypothetical in form in the sense that they assert categorically that a certain subject matter is described thus and so rather than, hypothetically, that anything is characterized in a certain way if it is first characterized in a certain other way. But this subject-predicate view does not preclude our expressing all universal statements by conditional sentences when our aim is a calculus of implications and not a philosophic consideration of law-statements. We are not committed to the view that law-statements must always be expressed by sentences which are syntactically subject-predicate in form. Nor have we said anything which conflicts with the fact that law-statements expressed by mathematical formulas, rather than by sentences syntactically subject-predicate in form, are not only desirable but indispensable for the practice of science. The point is simply that whenever one uses formulas to express laws, what he is asserting is that a certain subject matter is characterized in the way prescribed by a given formula.

In my introductory remarks I said that I would not comment on the problem of finding evidence for law-statements, but it should be noticed that the sense in which the position I have proposed makes laws ultimately categorical rather than hypotheti-

cal is not a sense which in any way minimizes the tentative character of law-statements. Laws most emphatically are not categorical in the sense of being asserted without doubt, and they just as emphatically are hypothetical in the sense of being hypotheses —of being always subject to revision. Problems concerning the evidence for law-statements, the concept of causality, and the presuppositions of science, both universal and existential, are philosophic problems which I believe it would be fruitful to examine from the point of view I have suggested for law-statements.

MANLEY THOMPSON

UNIVERSITY OF CHICAGO

COMMENTS AND CRITICISM

IS THE WORK OF ART A CONSTRUCT? A REPLY TO PROFESSOR PEPPER

PROFESSOR S. C. Pepper, in recent years, has given us several descriptions of the work of art.[1] To my knowledge, all but the last of these descriptions have been subjected to published criticism.[2] If there is inference from silence, then one might infer that Professor Pepper has finally been able to formulate an adequate description of the work of art, that is, of the object of appreciative and critical appraisal. However, after reviewing the interesting set of papers listed below in footnotes 1 and 2, I have come to the conclusion that the object of appreciation and criticism has not yet been properly described. In this note, therefore, I wish to point out the defects which I have found in Professor Pepper's latest revised description of the work of art. The solution of Professor Pepper's which I intend to question is that the work of art is a construct.

I will show, first of all, why Pepper was driven to say that the terminal object of critical evaluation is a construct. In his

[1] "Supplementary Essay: The Aesthetic Work of Art," in *The Basis of Criticism in the Arts* (Cambridge, Mass., 1945).

"Further Consideration of the Aesthetic Work of Art," this JOURNAL, Vol. XLIX, No. 8 (April 10, 1952), pp. 274–279.

"On Professor Jarrett's Questions about the Aesthetic Object," this JOURNAL, Vol. XLIX, No. 20 (September 25, 1952), pp. 633–641.

[2] Nathan Berall, "A Note on Professor Pepper's Aesthetic Object," this JOURNAL, Vol. XLVIII, No. 24 (November 22, 1951), pp. 750–754.

James L. Jarrett, "More on Professor Pepper's Theory of the Aesthetic Object," this JOURNAL, Vol. XLIX, No. 14 (July 3, 1952), pp. 475–478.

"Supplementary Essay" Pepper distinguished three components of what we might ordinarily call the appreciative or critical situation. These are: (a) the art product, which is a continuant and usually a physical object (afterwards more accurately described by Pepper as the control object); (b) the spectator, who is a psychophysical continuant; and (c) the perception of the spectator when he confronts the art product. The spectator may confront the art product several times, so that the repetition of this simple situation will result in the occurrence of a series of perceptions P_1, P_2, . . ., P_n. (1) It is this perceptive series, said Pepper, which is the work of art, that is, it is the object of appreciative and critical appraisal. It is always a perceived object. Then Pepper expanded his inquiry to cover the many perceptive series of indefinitely many spectators each of whom confronts the same art product. The two new descriptions which followed are (2) that the work of art is the total perceptive series of different spectators and (3) that it is the common object of these different subjects, that is, it is that towards which the different perceptive series of these spectators converge.

The crucial difficulty with descriptions (1), (2), and (3) is that each one is inconsistent with the initial statement that the work of art is always a perceived object. This is the substance of Professor Berall's criticism and one which has been recognized by Pepper. In order, then, to escape the charge that the work of art cannot be both *always perceived* and some sort of *conceived* object Pepper was forced to re-evaluate the results of his first analysis.

The problem Pepper faced in re-working these results was, on the one hand, to incorporate references to the contents of perception into his description, and, on the other, to make allowances for the fact that many spectators seem to be required for the gathering of all details relevant in a work of art. Thus Pepper told us in his second article, "Further Consideration of the Aesthetic Work of Art," that the work of art is a construct, an ideal object of aesthetic perception, and finally that "it is *a dispositional object based on the objects of aesthetic perception stimulated by a physical work of art, and is an extrapolation from these to the conception of a funded perception (or, where necessary, the collection of funded perceptions) which contains all the aesthetically relevant details*" (pp. 278–279, italics in the original).

Professor Jarrett questioned this description by asking, among other things, whether in fact an ideal construct can be the actual instance of critical evaluation. Pepper's defense of his own description, in which the notion of the work of art as a construct

assumes major importance, is what I should now like to discuss in some detail. (I will now follow Pepper's argument as it appears in his article "On Professor Jarrett's Questions about the Aesthetic Object," numbering its most important points.)

Pepper begins his argument with the assertion (1) that it is necessary to consider the terminal object of critical evaluation as a construct. The purpose of this reiteration is to draw our attention to the ambiguity of the word "object." It is the *object*, says Pepper, which must be considered as a construct, and it is the uncertain status of this *object* that provokes the question, "Can in fact the object of an actual instance of critical evaluation be an ideal construct?"[3] Pepper's general answer to this question certainly does not settle the matter, but it does help him in his desire to exclude some superficially plausible candidates for the role of "object." The answer is that the object is "that about which a number of critics are speaking when they are discussing the content and aesthetic value of a work of art."[4] There is no startling revelation here, but if the object (and remember to consider this as a construct) is *that* about which a *number* of critics are *speaking*, then P_4 (of perceptive series P_1-P_2-P_3-P_4, to use Pepper's symbolization) is not the object unless a critic believes that his "terminal funded perception" (P_4) represents or is equivalent to "the total perceptual capacity of the work of art."[5] Pepper's unwillingness to make this identification is no innovation, but the form in which his unwillingness is cast is important, for Pepper says, in effect, that (2) a necessary condition to be fulfilled by the terminal object of critical evaluation is that it represent the total perceptual capacity of the work of art. The reference to perceptual capacity reminds one of a statement from an earlier description: that the work of art is a dispositional object.

Pepper pursues his denial that the terminal funded perception is the terminal object of critical evaluation by pointing out that the work of art is *complex*, therefore requiring (a) time for one critic to experience it and (b) time for the gathering of many critics' experiences into a comprehensive appraisal of the work.

"It follows from this conception that the object of critical evaluation—that terminal goal of the critical cognitive process—is a construct."[6] According to Pepper, the major benefit derived from construing the work of art as a construct is that a judgment

[3] Pepper, "On Professor Jarrett's Questions," p. 638.
[4] Ibid., p. 638.
[5] Ibid., pp. 638–639.
[6] Ibid., p. 639.

evaluating some particular perception is distinguished from a judgment evaluating the total relevant perceptual capacity of the work.

Now, to be sure, these judgments differ. What Pepper is doing, I think, is drawing our attention to a difference in *levels of criticism*. There is what I choose to call the level of *personal criticism* which finds one individual evaluating his own funded perceptions. There is also the level of *anthological* or *collective criticism* where there occurs the editing of several highly funded perceptions had originally by many individuals. These levels might conceivably be extended so that a critic's judgment would consist merely of the barren operation of selecting and re-arranging the judgments of already existing collections. Examples from these levels of criticism are, for level 1, anyone who has taken the trouble to confront personally a poem or a painting, to re-expose himself to the particular control object at suitable intervals, and to cultivate his perceptual faculties and broaden his range of association; for level 2, the professional or scholarly critic who operates on level 1 but also makes it his business to acquaint himself with the personal judgments of others and tries to develop, from this variety, a balanced and possibly thorough judgment of the work of art, a judgment which is correctly described as collective; for level 3, the *poseur*, the pedant, and the harried college student who, lacking the time, interest, or ability to indulge in criticism on levels 1 and 2, appropriate the conclusions of others for their own. Pepper does not say any of this, nor do these terms appear in his articles. Whether he would approve of the concept of levels of criticism I do not know, but I believe the original distinction suggested by him is important.

It remains to be seen whether the notion of the construct is necessary for this distinction and, more important, precisely what Pepper means by a "construct." We have, so far, statements that the terminal *object* of critical evaluation is a construct, that the construct represents the *total* perceptual *capacity* of the work of art, and that the terminal *goal* of the critical process is a construct. No decision has been reached as to the nature of the *object* which is a construct except that it is, in some respects, related to the notions of totality, capacity, and goal. An analysis of these words, therefore, is needed. A goal, for example, may be an *objective point* that one tries to reach, like a hockey goal or the goal of selling $50,000 in life-insurance during one month, but a goal may also be some *ideal point* toward which effort is directed. The latter sense of "goal" is expressed by the banal adage that "every day in every way, I am getting better and better." This latter

sense gives no indication that there is an end to the goal of self betterment.

I believe that it is "goal" in the sense of a practice constantly indulged in, a process, or a continuous effort rather than in the sense of a fixed limit, that is consistent with Pepper's observations on criticism, for he does say that it takes time for one or several critics to get sufficiently funded experiences of the work of art and he does not suggest that the capacity is *exhausted* by such a collective endeavor. On the contrary, the collective endeavor may be said to be *adequate* to a given set of facts. It is consistent with this notion to suppose that, of different critical collections, many or all might be adequate to the aesthetic experiences of level 1, and that the measure of adequateness might vary according to time and place. This interpretation is supported by Pepper's comment on a supposedly definitive rendition of a Scarlatti sonata by Horowitz. Of this he states that before Horowitz played the sonata or before a critic heard it, "the composition had that perceptual capacity. And that was all along 'the real thing.'. . ."[7] The point I want to emphasize here is that Pepper assumes that *before* Horowitz interpreted the sonata the composition had that untapped perceptual capacity. The fact that this capacity had not been actualized by Horowitz does not prevent Pepper from saying that it was all along the real thing. This particular example calls to mind Pepper's earlier remarks about extrapolation.[8] According to these remarks I infer that the critic who succeeds in extrapolating the work of art has no assurance that the object which he conceives is a stable object. There is no guarantee that his extrapolation will succeed in exhausting the potential of any art object. This example, with its mention of the real thing, seems to suggest that *sometimes* the extrapolated object is stable.

From these remarks I must conclude that for Pepper to say the work of art is a construct means that it is the class of perceptions which have been judged relevant to the control object *and also* the class of potential experiences (designated as the perceptual capacity) inferred from the former class. Two corollaries of the theory proposed are that perceiving a work of art is a temporal process and that phenomena such as funding suggest to us that a continuation of these processes will result in a growth of awareness of the work of art.

While there are good reasons for believing that Pepper thinks

[7] Ibid., p. 639.

[8] See his "Further Consideration of the Aesthetic Work of Art," cited in footnote 1.

works of art are constructs out of actual experiences *and* perceptual capacities, there are equally convincing reasons for not believing this. For example, in discussing the problem of critically interpreting a Scarlatti sonata, Pepper allows that one man might be capable of fully appreciating only the technical capacities of the sonata while another would have a full appreciation of only its compositional capacities. If, in general, their perceptual grasps of the work overlapped, then "would not the complete evaluative judgment of the work be the same, but in this instance constructed from the mutually complementary perceptions of the two perceivers? . . . the object of critical evaluation is precisely that rich work of art. This is what I mean by calling the object a construct."[9] It is plain from this passage that the *construct is simply a collection* of experiences of many individuals or, from another passage, a collection of "all relevant perceptions generated by the control object."[10] Because the work of art is a collection of actual perceptions it has the advantage of being what Pepper calls a "verifiable public object."[11]

It is difficult to reconcile this meaning of construct with some of Pepper's previous remarks about the work of art. Those remarks, I assume, were to provide the basis for the meaning he gives; yet, the meaning he gives does not follow clearly from the preliminary statements. Instead, as I have demonstrated, another meaning is assignable. If one regards Pepper's construct as simply a collection of experiences, then the perceptions which are *generated* by the control object are the work of art and the work of art is no more and no less than just those perceptions. If, however, the construct consists of all actual perceptions plus its total relevant perceptual capacity, then the construct cannot be a simple collection of generated perceptions but rather must be a class of *selected* perceptions plus a class of inferred entities. The possibility of extracting these two different meanings of a construct from Pepper's latest formulation casts an undesirable shadow of vagueness over his attempted description. Moreover, Pepper allows that perhaps *no* single critic ever perceives the constructed object of criticism (whatever that object might be), but if that is the case the terminal object of evaluation is hardly a goal. Needless to say, the term "goal," too, needs clarification in this context. What Pepper seems to claim is that any one person cannot identify his experience with the work of art, while seeming to

[9] Pepper, "On Professor Jarrett's Questions," p. 640.

[10] Ibid., p. 640. Cf. pp. 640–641: "the object of critical evaluation . . . [is] a certain collection of perceptions (and thus a construct)."

[11] *Ibid.*, p. 641.

claim also that by funding his own perceptions and by using the descriptions of other persons' experiences he can know at least in part what the work of art is like; we can describe various qualities of the work of art, yet no one spectator actually experiences that combination or series of qualities. I am convinced that this claim can be supported without employing the troublesome concept of construct.

DONALD F. HENZE

UNIVERSITY OF WISCONSIN

BOOK REVIEWS

Truth and Consequence in Mediaeval Logic. ERNEST A. MOODY. Amsterdam: North-Holland Publishing Company, 1953. viii, 113 pp. (Studies in Logic and the Foundations of Mathematics; L. E. J. Brouwer, E. W. Beth, A. Heyting, editors.) $3.25.

This is a work which should be of considerable interest not only to those who are chiefly historians, but also to those who are primarily symbolic logicians. Historians will find much to stimulate their thinking about the proper interpretation which should be attached to some of the key logical writings of the later Middle Ages. This will be especially the case for historians who are already versed in the standard language of modern symbolic logic. In the present work, it is one of Moody's basic aims to translate the most significant logical ideas of the fourteenth century into the language of modern logic. In realizing this aim, Moody displays both logical and exegetical skill. On the other hand, contemporary logicians will find it most revealing that some of their more cherished doctrines were germinating in the mature treatises of mediaeval logic written at Oxford and the University of Paris in the fifty years between 1320 and 1370. In fact, as seen through the symbolic translations of Moody, the works of such mediaeval logicians as Jean Buridan (died 1358) and his pupil Albert of Saxony (died 1390) appear to be closely akin to some of the logical writings of such modern authors as C. I. Lewis, Rudolf Carnap, W. V. Quine, and Alfred Tarski. Since the mature logic of the fourteenth century had its origins in the work of Peter Abelard (1079–1142), which was in the tradition of the Stoic-Megaric extension of Aristotle's logic, Moody's work gives added support to the thesis that modern symbolic logic is a part of a highly respectable ancient tradition. In much the same way that it is proper to say

that modern philosophy is but a footnote to Plato, so the evidence grows that modern logic is but a footnote to Aristotle.

The basic mediaeval texts for the present work are the *Sophismata* and *Consequentiae* by Jean Buridan and the *Summa logicae* by Albert of Saxony. These are valuable sources for constructing a mediaeval theory of truth conditions for both categorematic and syncategorematic terms, and for constructing a mediaeval theory of consequence or deduction. Both theories are highly formal. It is the distinction between the *signification* and *supposition* of a term which makes possible the formal treatment of truth conditions, while it is essentially the use of the axiomatic method in logical deduction which makes possible the formal development of the theory of consequence. By appealing to the doctrine of supposition, Moody derives from his mediaeval texts such "modern" logical doctrines as different levels of language, the interpretation of the copula as essentially an existential quantifier, and a truth-table analysis of syncategorematic terms which correspond to the standard 2-valued sentential operators. By means of the axiomatic method, Moody finds a close formal analogy between the mediaeval theory of consequence and Lewis' system of strict implication S3.

More indigenous to the mediaeval treatment is probably the extensive use in logic of the existential import of sentences (propositions) and the use which is made of such fundamental temporal distinctions as that involved in sentences about the past, present, and future. The emphasis on the existential import of sentences gives rise to an interesting mediaeval analysis of the ancient paradox of the liar. The use which is made of temporal distinctions enables Moody to find in the mediaeval logic of sentences "as of now" the fourteenth-century equivalent of the "modern" system of material implication. In fact, it turns out that this mediaeval equivalent of the system of material implication is but a particular kind of subsystem of the mediaeval equivalent of Lewis' system of strict implication S3. Moody, thus, concludes that the mediaeval logicians not only recognized the essential distinctions between systems of material and strict implication, but actually developed such systems side by side in a remarkably exhaustive manner.

However, it is not be inferred from all of this that the mediaeval logicians had clearly grasped and developed the modern notion of a symbolic calculus as a set of formalized sentences in an object language. Rather, according to Moody, it was of the essence of the mediaeval logical tradition to conceive of the science of logic as consisting only of rules or metatheorems whose terms stand for expressions of a natural language. "Mediaeval logic was thus

conceived as a formulation, in a metalanguage or 'syntax language,' of the logical structure of scholastic Latin in its exact or 'scientific' usage" (p. 27). Since it is also of the essence of the mediaeval logical tradition to be concerned only with the logical form of expressions, Moody does assume throughout the present work that it is both legitimate and possible to represent the rules and metatheorems of mediaeval logic by formalized sentences in an object language. This assumption is basic for Moody's translation of the key principles of mediaeval logic into the language of modern symbolic logic.

This is sufficient to indicate that the present work is a very thought-provoking addition to the constantly growing literature on the history of logic. In his preface, Moody asserts that his work "represents the attempt of a mediaeval scholar, who is only an amateur in the field of contemporary formal logic, to interpret some of the rich content of fourteenth century logical literature in the logical language of the twentieth century." In closing this review, it, thus, seems fair for one who is more of a logician than a mediaeval scholar to pass critical judgment on the kind of historical study which is reflected by the present work. The essence of this judgment is contained in two questionable conclusions which this kind of work may encourage in some readers. The very act of representing the concepts of mediaeval logic in the symbolism of modern logic suggests the idea that mediaeval logic is the same as modern logic. A modern symbolic analysis of mediaeval logic does not justify this conclusion any more than the possibility of translating from French into English proves that French is the same as English. Failure to guard against this kind of conclusion can lead to the reading of modern ideas into mediaeval logical texts which are far from justified by the historical facts. Contrariwise, habitual use of a modern symbolic language to express logical form may encourage the conclusion that such a language must be used for the clear expression of logical form, and, hence, that mediaeval Latin is incapable of an unambiguous expression of logical form. When taken seriously, this would render hopeless any attempt to discover modern logical conceptions in mediaeval treatises. There is no more justification for this extreme conclusion than there is for a claim by a patriotic Englishman that nothing which he expresses in English can be expressed in French. To guard against the first questionable conclusion is to avoid reading too many modern logical ideas into mediaeval logic, while to guard against the second questionable conclusion is to practice tolerance toward serious efforts to discover modern logical ideas in mediaeval logic. If Moody is at all guilty of either of these ques-

tionable conclusions, it is not the second, and even if he does sin slightly in regard to the first, a cautious reader will learn much from Moody's serious effort to express the ideas of fourteenth-century logic in the exact language of modern logic.

ATWELL R. TURQUETTE

UNIVERSITY OF ILLINOIS

Conventional Logic and Modern Logic: A Prelude to Transition. JOSEPH T. CLARK, S. J. With a preface by W. V. Quine. Woodstock, Md.: Woodstock College Press, 1952. viii, 109 pp. (Philosophical Studies of the American Catholic Philosophical Association, Vol. III.) Paper, $2.00.

During most of the present century, particularly in America, the great developments of formal logic initiated by Boole, Frege, and Russell have received only disparagement from the Neo-scholastics, whose textbooks of logic have continued to expound a system which, though alleged to be Aristotelian and scholastic, reflects the logic of Port Royal and the decadent tradition of the eighteenth century. Only in Poland, where a flourishing school of mathematical logic became established after the first World War, was the iron curtain of this Neo-scholastic isolationism breached. Salamucha, Bochenski, and other members of this group not only defended modern formal logic as compatible with Catholic philosophy, but brought forth much evidence to show that the genuine logic of the mediaeval schools was closer to modern formal logic, in spirit and even in content, than to current Neo-scholastic logic. In recent years this view has commenced to infiltrate into Catholic institutions in England and America, though the mistaken notion, that one cannot accept mathematical logic without accepting positivism or nominalism, has greatly hindered the process.

Father Clark's engaging little book offers a sketch of some of the contributions to logic made by Aristotle, Theophrastus, the Stoics, and the mediaeval schoolmen, designed to show that this authentic "traditional logic" was kindred in aim, and frequently close in teaching, to current formal logic. As Professor Quine states in his preface, "By his apt translations of ancient and mediaeval passages into the technical terminology of current logic, Father Clark brings our remote predecessors so convincingly up to date that we feel we have been listening to them—Chrysippus, Aquinas, Peter of Spain, and the rest—in a Harvard logic seminar" (p. vii).

The book is in three chapters, on Aristotelian logic, Traditional (= Theophrastian and Stoic) logic, and Scholastic logic. Some

very apt quotations exhibit the affinity of the ideas and terminology used by Plato and Aristotle in their formulations of the methods of division and of syllogism to those employed by Archytas and Eudochus in their mathematical investigations. Thus the method of exclusion-inclusion, the theory of proportionality and of geometric mean, and the use of letters and figures as symbols, were borrowed by these logicians from mathematics. Aristotle's recognition of polyadic predicates, non-syllogistic inferences, and of a few laws of sentential calculus, is pointed out. Father Clark concludes eloquently and elegantly: "Whoever intends to be a modern Aristotelian and presumes *ab initio* to repudiate or to minimize mathematical logic, does not know mathematics, does not know logic, and above all does not know Aristotle" (p. 10).

In dealing with Theophrastus, Father Clark mentions that logician's awareness of the need of multiple quantification for the analysis of some sentences, a fact previously pointed out by Bochenski. He also discusses, as first steps in the creation of a logic of propositions, the three Theophrastian "completely hypothetical syllogisms," which he expresses as rules governing these three laws: $p \supset q \,.\, q \supset r \,.\supset. p \supset r$; $p \supset q \,.\, -p \supset r \,.\supset. -q \supset r$; and $p \supset r \,.\, q \supset -r \,.\supset. p \supset -q$. The Stoics are credited with discovery of the logic of unanalyzed propositions, and with the truth-functional interpretation of the sentential connectives. The controversies over the meaning of the conditional connective are mentioned, and the Philonian view is identified with modern "material implication." Father Clark enumerates the five Stoic "indemonstrables" as evidence of the conception of a calculus of propositions in Stoic logic, and he concludes as before: "Whoever intends to be a contemporary devotee of traditional logic and presumes *ab initio* to repudiate or to minimize a calculus of statements, does not know statements, does not know the logic of statements, and above all does not know traditional logic" (p. 34).

The chapter on scholastic logic credits Boethius and Peter of Spain with recognition of material implication, and mentions the use by Cassiodorus and Martianus Capella of basic theorems of propositional logic. Albert the Great is quoted, to show his explicit recognition of the role of variables in formal logic, and to show that he analyzed categorical propositions in the modern manner, as "formal implications," such that the universal affirmative is understood in the sense of the formula, '$(x) \,.\, Fx \supset Gx$.' Thomas Aquinas is quoted to show that he also recognized this functional analysis of categorical propositions; he is credited, in addition, with the statement of these three theorems of "strict implication": $p \dashv q \,.\dashv. \Diamond p \dashv \Diamond q$; $p \dashv q \,.\dashv. -\Diamond q \dashv -\Diamond p$; $p \dashv q \,.\dashv. -\Diamond -p$

$\dashv - \Diamond - q$. The developed theory of consequence, involving an organized calculus of unanalyzed propositions, is illustrated from the work of William of Ockham, by way of Salamucha's study "Die Aussagenlogik bei Wilhelm Ockham" (*Franziskanische Studien* 32, 1950, pp. 97–134). It is held that Ockham's conception of the *consequentia materialis* is equivalent to modern material implication, as Salamucha argued; twenty of Ockham's rules of consequence are quoted, translated, and symbolized not as rules but as corresponding theorems of the calculus of propositions. The Neo-scholastic critics of mathematical logic are once more rebuked, at the end of this chapter, in these words: "Whoever purports to be an exponent of Scholastic logic and presumes *ab initio* to repudiate or to minimize a calculus of statements, does not know statements, does not know the logical priority of statement calculus to the theory of the syllogism, and above all does not know Scholastic logic" (p. 59). A thirty-seven page critical bibliography is provided, covering important works in the field of mathematical logic as well as studies of ancient and mediaeval logic pertinent to the theme of the book. This is followed by indices of subjects and names, of Greek and Latin authors, and of Greek and Latin technical terms.

This book makes no pretense of giving an adequate account of the subjects and authors with which it deals, but seeks only to make it evident that the ancient and mediaeval logicians were interested in the same enterprise that modern mathematical logicians pursue, and that they would, if alive today, be active members of the Association for Symbolic Logic. Judged by its avowed aim, the book is excellent, persuasive, and extremely well written. The translations are at times very free, as when Boethius' distinction of conditionals into accidental and consequential is rendered by "material implication" and "formal implication" (p. 38). Father Clark also fails to appreciate the fact that the Stoic indemonstrables were formulated as schema of arguments, and not as conditional sentences; thus his criticism of the Stoic use of ἄρα as a conditional connective, in the formulation of these indemonstrables, is without foundation. Again, the reader is given the impression that Philo was one of the Stoic logicians, and that Philonian implication was accepted by at least an important segment of the Stoic school. A slip in quotation occurs on p. 56, Rule (9), where "antecedentis" is written in place of "conclusionis."

More serious doubts might be raised as to the correctness of the attribution to Boethius, Peter of Spain, and Ockham, of the modern conception of "material implication" in the interpretation of the conditional. While this notion was undoubtedly understood

by these authors, there are many texts which indicate that they did not accept it as the correct interpretation of the conditional connective, at least in the case of conditionals understood in the unqualified sense (*simpliciter*) and not in a merely temporal sense (*ut nunc*).[1] One might doubt, likewise, that Ockham's use of a law of propositional logic to validate the reduction of *Cesare* to *Celarent* is sufficient to justify the assertion that Ockham "was clearly cognizant of *the logical priority* of a calculus of statements to any logic of terms in syllogistic theory" (p. 59). Such qualifications do not seriously weaken the thesis of the book, for there is ample evidence, without any need for exaggeration, that ancient and mediaeval logic, in its periods of greatest vitality, moved on paths of development and inquiry which have only now reached explicit formulation and definitive fulfillment in modern mathematical logic. As a "Prelude to Transition," and especially as a persuasion toward removal of the barrier of prejudice which has kept many "traditionalists" from knowing modern logic and their own traditions, this little book fulfills its purpose admirably, and in a delightfully readable manner.

ERNEST A. MOODY

DILLEY, TEXAS

NEW BOOKS AND CURRENT JOURNALS

ÅKESSON, ELOF: *Punkter på ljuslinjen; idéhistoriska bidrag.* Lund: C. W. K. Gleerups Förlag [1954]. 319 p. 12 kronor.

CAMPANELLA, TOMMASO: *La prima e la seconda resurrezione. Inediti. Theologicorum libri XXVII–XXVIII.* Testo critico e traduzione a cura di Romano Amerio. Roma: Bocca, 1955. 263 p. (Edizione Nazionale dei Classici del Pensiero Italiano, Serie II, 1.)

CARABELLESE, PANTALEO: *La conscience concrète.* Choix de textes, traduction et introduction par Giuseppe Bufo et Luigi Aurigemma. Paris: Aubier, Editions Montaigne [1955]. 218 p. (Philosophes italiens.) 540 fr.

CHAUDHURY, PRAVAS JIVAN: *The Philosophy of Science.* With a Foreword by Edwin Arthur Burtt. Calcutta: Progressive Publishers [1955]. viii, 182 p. Rs. 7/–.

DUPRÉEL, EUGÈNE: *La pragmatologie.* Bruxelles: Les Editions du Parthénon [1955]. 95 p. (Institut de Sociologie Solvay, Col-

[1] Cf. E. A. Moody, *Truth and Consequence in Mediaeval Logic*, Amsterdam, 1953, Ch. IV, for an extended discussion of this problem.

lection de Sociologie générale et de Philosophie sociale.) 175 fr. b.

FERRATER MORA, JOSÉ, and LEBLANC, HUGUES: *Lógica matemática.* México-Buenos Aires: Fondo de Cultura Económica [1955]. 210 p.

HINTIKKA, K. JAAKKO J.: *Two Papers on Symbolic Logic: Form and Content in Quantification Theory and Reductions in the Theory of Types.* Helsinki: Akateeminen Kirjakauppa, 1955. 115 p. (Acta philosophica fennica, Fasc. VIII, 1955.)

KÖRNER, S.: *Kant.* [Harmondsworth, Middlesex, and Baltimore, Md.:] Penguin Books [1955]. 230 p. (Pelican Books, A338.) $0.65.

KRAMPF, WILHELM: *Die Philosophie Hugo Dinglers.* München: Eidos-Verlag [1955]. 71 p.

KRISTELLER, PAUL OSKAR: *Il pensiero filosofico di Marsilio Ficino.* Firenze: G. C. Sansoni [1953]. xix, 492 p. (Biblioteca storica del rinascimento, nuova serie, III.) L. 5.000.

LEWIS, NAPHTALI, and REINHOLD, MEYER: *Roman Civilization; Selected Readings.* Ed. with an Introd. and Notes. Volume II: *The Empire.* New York: Columbia Univ. Press, 1955. viii, 652 p. (Records of Civilization, Sources and Studies. No. XLV.) $7.50.

MCCUTCHEN, DUVAL T.: *The Creation Story and Modern Man.* [A new presentation illuminating the subject matter of Genesis I in terms of modern science and philosophy in the Western spirit, conceived in the ideological war against Communism.] Arlington, Virginia: [The Creation Story Publishers] 1954. 56 p. $1.00.

MARITAIN, JACQUES: *Bergsonian Philosophy and Thomism.* Tr. by Mabelle L. Andison in Collaboration with J. Gordon Andison. New York: Philosophical Library [1955]. 383 p. $6.00.

MARITAIN, JACQUES: *The Social and Political Philosophy of Jacques Maritain, Selected Readings.* By Joseph W. Evans and Leo R. Ward. New York: Scribner, 1955. xiv, 348 p. $5.00.

MEYERHOFF, HANS: *Time in Literature.* Berkeley & Los Angeles: Univ. of California Press, 1955. xiv, 160 p. $3.50.

MORGAN, ARTHUR E.: *Search for Purpose.* [Yellow Springs, Ohio:] Antioch Press [1955]. vii, 197 p. $3.00.

PAP, ARTHUR: *Analytische Erkenntnistheorie; kritische Übersicht über die neueste Entwicklung in USA und England.* Wien: Springer-Verlag, 1955. vi, 242 p. $5.70.

PLATZECK, ERHARD-WOLFRAM: *Von der Analogie zum Syllogismus; ein systematisch-historischer Darstellungsversuch der*

Entfaltung des methodischen Logos bei Sokrates, Platon, Aristoteles (im Anschluss an Metaphysik, M, 4, 1078 b 17–32). Paderborn: Schöningh, 1954. 132 p.

RADHAKRISHNAN, SARVEPALLI: ***Recovery of Faith.*** New York: Harper [1955]. xvii, 205 p. (World Perspectives, Volume Four. Planned and ed. by Ruth Nanda Anshen.) $3.00.

SANTAYANA, GEORGE: ***Scepticism and Animal Faith; Introduction to a System of Philosophy.*** New York: Dover Publications [1955]. xii, 314 p. Cloth, $3.50; Paper, $1.50.

SANTAYANA, GEORGE: ***The Sense of Beauty, Being the Outline of Aesthetic Theory.*** New York: Dover Publications [1955]. ix, 275 p. Cloth, $2.85; Paper, $1.25.

SLOANE, EUGENE H.: ***Words and Their Ways; a Primer of Philology and Philosophy.*** Bay Ridge, Md.: Owl Press, 1955. iv, 108 p. $1.00.

SMITH, HUSTON: ***The Purposes of Higher Education.*** Foreword by Arthur H. Compton. New York: Harper [1955]. xix, 218 p. $3.50.

SMITH, WILLIAM A.: ***Ancient Education.*** New York: Philosophical Library [1955]. xii, 309 p. $3.75.

SPINOZA: ***The Chief Works of Benedict De Spinoza.*** Tr. from the Latin, with an Introd., by R. H. M. Elwes. With a Bibliographical Note by Francesco Cordasco. New York: Dover Publications [1955]. 2 v. Paper, $1.50 per vol.

SWABEY, MARIE COLLINS: ***Logic and Nature.*** [2d ed., rev.] Washington Square, New York: New York Univ. Press, 1955. xii, 199 p. $3.75.

TALLET, JORGE: ***El sér absoluto.*** México: [Ediciones Humanismo] 1955. 107 p.

THOMPSON, SAMUEL M.: ***A Modern Philosophy of Religion.*** Chicago: H. Regnery, 1955. xvii, 601 p. $5.75 (text price).

TSANOFF, RADOSLAV A.: ***Ethics.*** Rev. ed. New York: Harper [1955]. xv, 430 p. $4.00.

VAN DEN BERG, J. H.: ***The Phenomenological Approach to Psychiatry; an Introduction to Recent Phenomenological Psychopathology.*** Springfield, Ill.: Charles C. Thomas [1955]. ix, 105 p. (Publication Number 247, American Lectures Series. A Monograph in American Lectures in Philosophy, ed. by Marvin Farber.) $3.00.

WACHTEL, HENRY I.: ***Security for All and Free Enterprise; a Summary of the Social Philosophy of Josef Popper-Lynkeus.*** Ed. and with Notes by Henry I. Wachtel. With an Introd. by Albert Einstein. New York: Philosophical Library [1955]. xi, 162 p. $3.00.

WESTMAN, ROLF: *Plutarch gegen Kolotes; seine Schrift "Adversus Colotem" als philosophiegeschichtliche Quelle.* Helsingfors, 1955. 332 p. (Acta philosophica fennica, Fasc. VII, 1955.)

WHITE, MORTON: *The Age of Analysis: Twentieth Century Philosophers.* Selected, with Introd. and Interpretative Commentary. Boston: Houghton Mifflin, 1955. 253 p. (The Great Ages of Western Philosophy, VI.) $3.00.

WOOD, H. G.: Belief and Unbelief since 1850. Cambridge: University Press; [New York: Cambridge Univ. Press] 1955. viii, 143 p. $2.75.

WRIGHT, CONRAD: *The Beginnings of Unitarianism in America.* Boston: Pub. by Starr King Press, distributed by Beacon Press [1955]. 305 p. $4.00.

REVISTA BRASILEIRA DE FILOSOFIA. Vol. III, Fasc. 4, Out.-Dez., 1953. *Luigi Bagolini:* A interpretação dos mitos. *Heraldo Barbuy:* Considerações sôbre a crise do senso comum. *Renato Cirell Czerna:* Reflexões sôbre "Deus Presente" e "Deus Futuro" em Rainer Maria Rilke. *Luiz Washington:* Estética Fenomenológica. *João Nepomuceno Haas, S.J.:* Filosofia do Organismo (cont.).—Vol. IV, Fasc. 1, Janeiro-Março, 1954. *Julián Marias:* La universidad, realidad problematica. *Hélio Jaguaribe:* A Crise da Universidade. *Milton Vargas:* A origem e o valor da ciência moderna. *F. M. Gomide:* O aspecto epistemológico do conceito de átomo da física. *Federico Patka:* Os problemas filosófico-antropológicos na antiguidade grega: Sócrates, Platão e Aristóteles. *Jara de Lima e Souza:* Filosofia de Hegel e teologia especulativa.

NOTES AND NEWS

The Department of Philosophy at Yale University announces that the following appointments have been made of Visiting Lecturers for 1955–56:

Professor Julian Marias, of the Instituto de Humanidades, Madrid, and the University of California at Los Angeles.

Professor Nathaniel M. Lawrence, Jr., of the University of California at Los Angeles.

Professor Arthur Pap, of Lehigh University.

Mr. Roderick N. Smart, University College of Wales, Aberystwyth.

And as Instructor:

Mr. Alan R. Anderson, Dartmouth College.